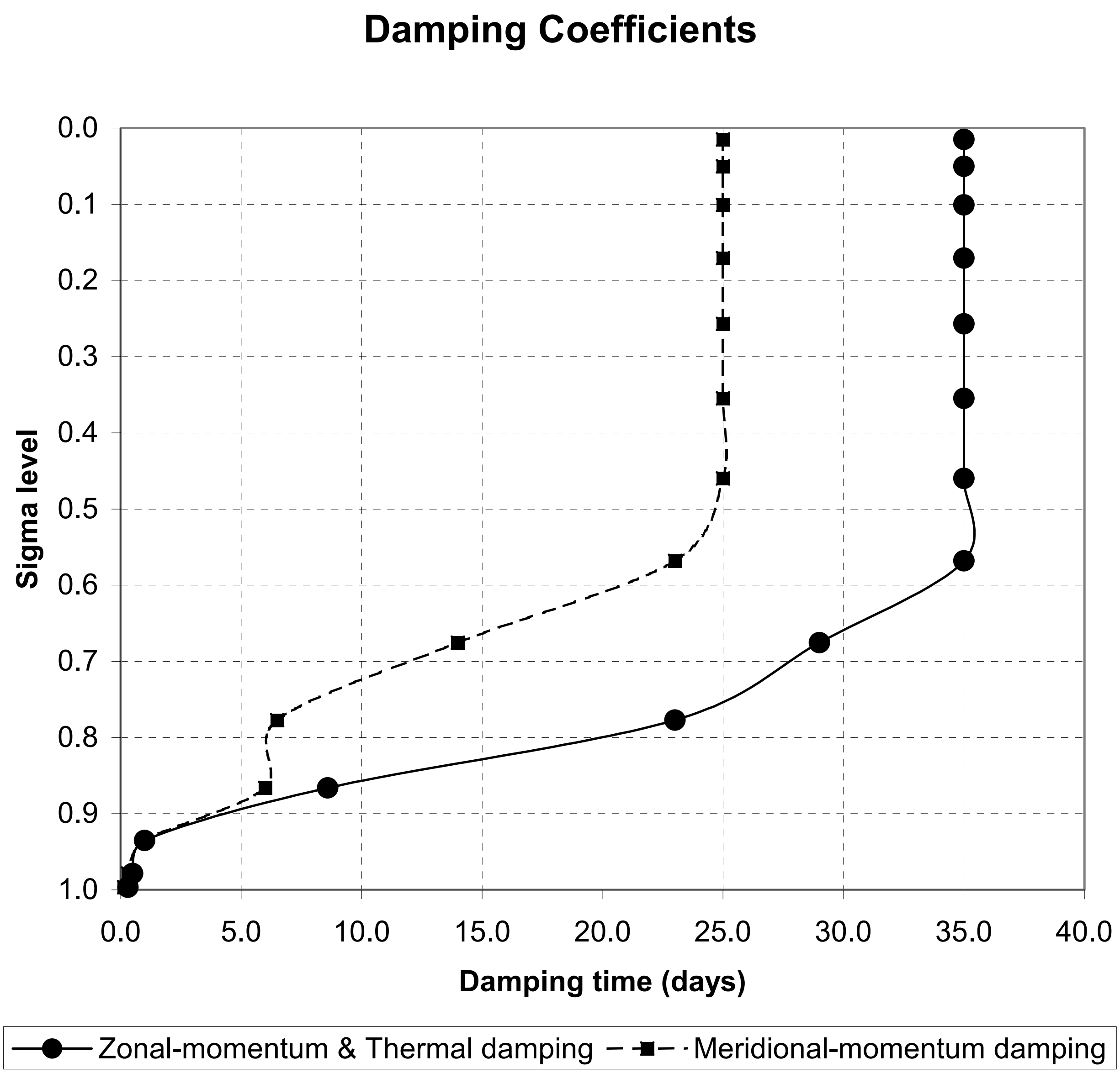

Fig. 1: Solid Line: damping timescales as a function of model level for the Rayleigh-friction coefficient in the zonal-momentum equation and the Newtonian-damping coefficient in the thermodynamic equation. Dashed Line: damping timescale for the meridional-momentum equation.

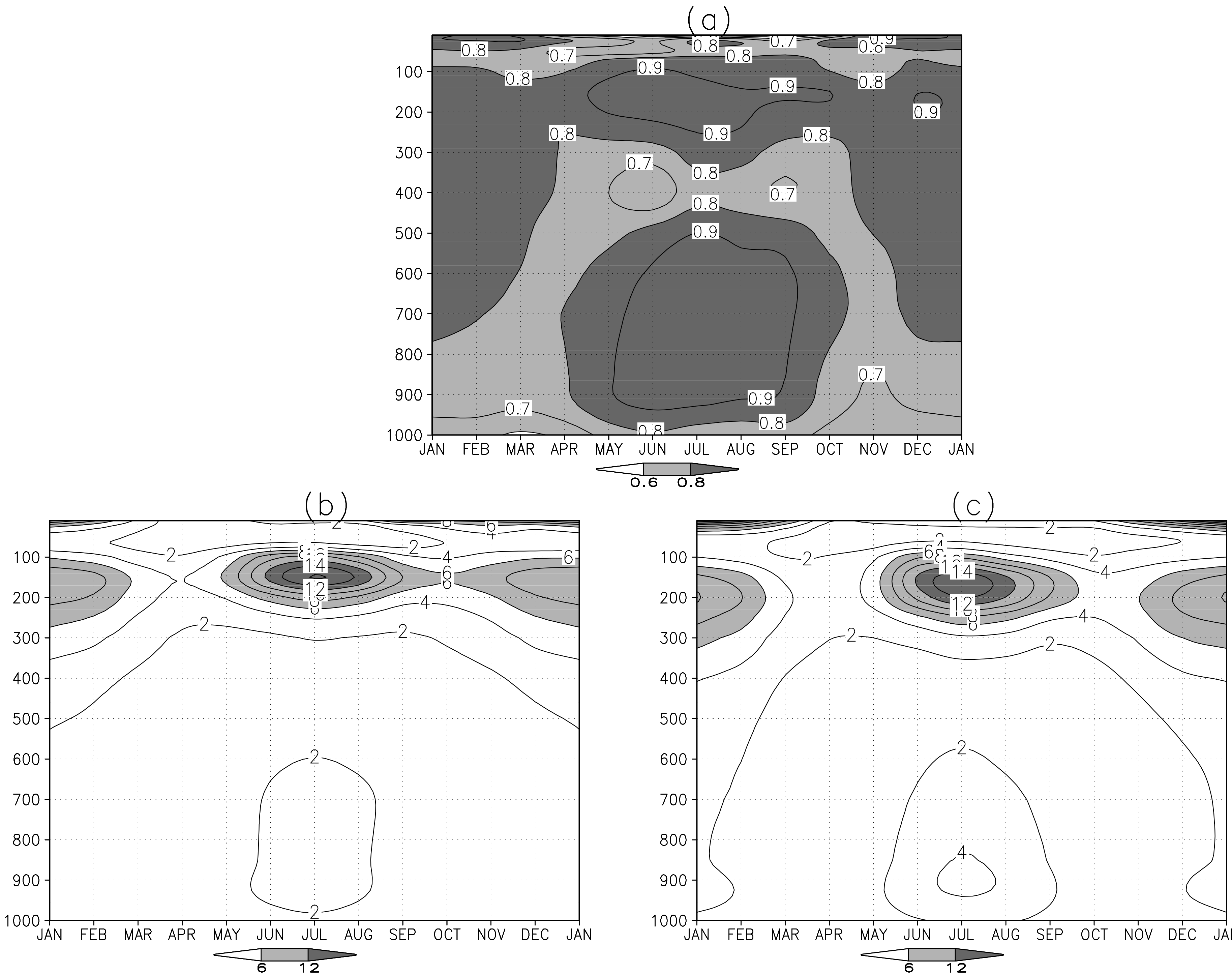

Fig. 2: a) Area weighted spatial pattern correlation between the 52 year average of the NCEP/NCAR reanalysis and Control simulation's horizontal streamfunction as a function of pressure and climatological month. b) Area-weighted global integral of the square of the stationary wave streamfunction amplitude for the NCEP/NCAR reanalysis. c) As in b), but for the control run of the coupled-model. Contour interval: 10^13 m^2s^-2.

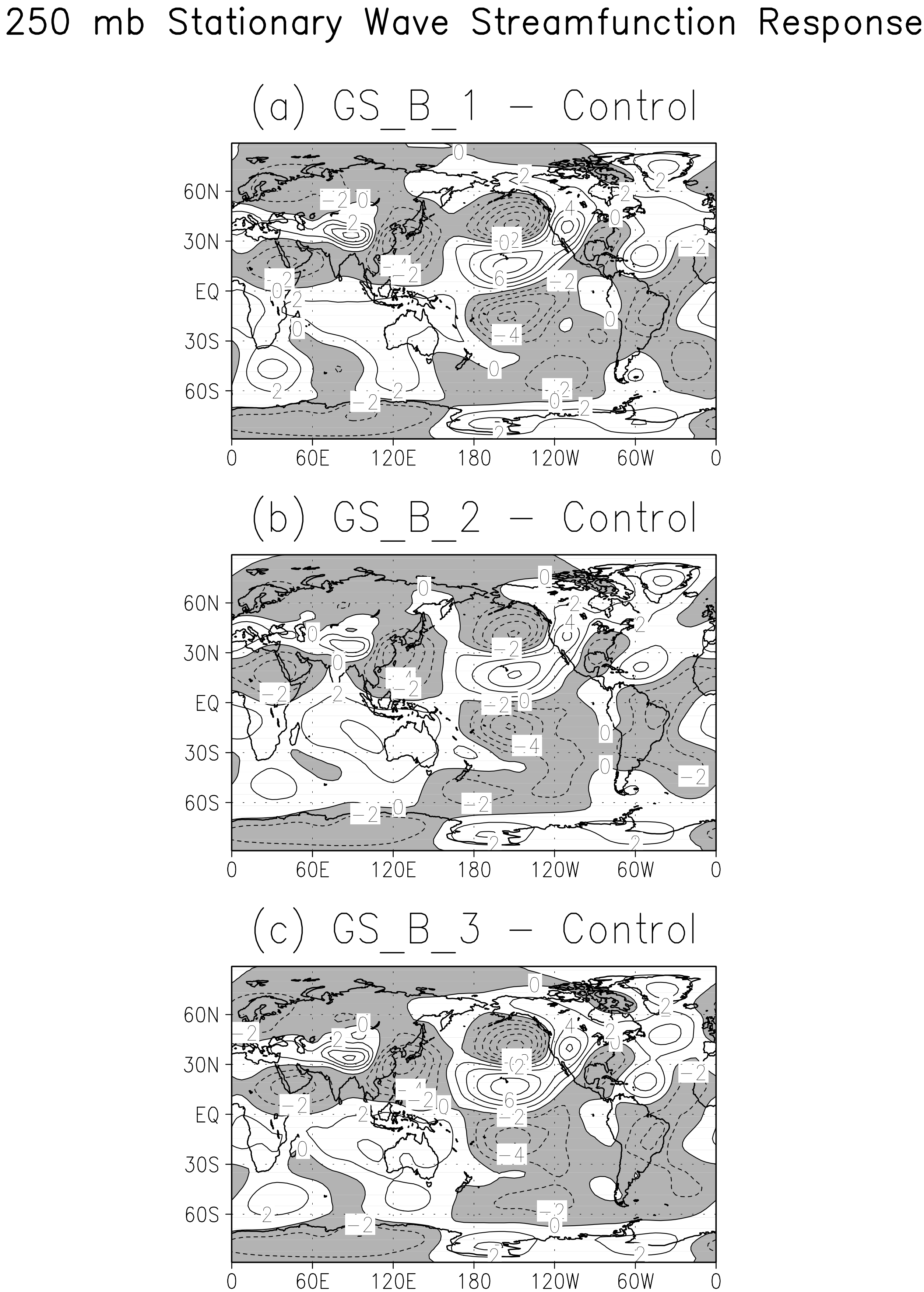

Fig. 3: Differences in stationary wave streamfunction at 250 mb between the climate change scenario integration and the control climate for the three climate change scenario ensemble members described in Section 2.1. Contour interval is 2x10^6 m^2s^-1 and negative values are shaded.

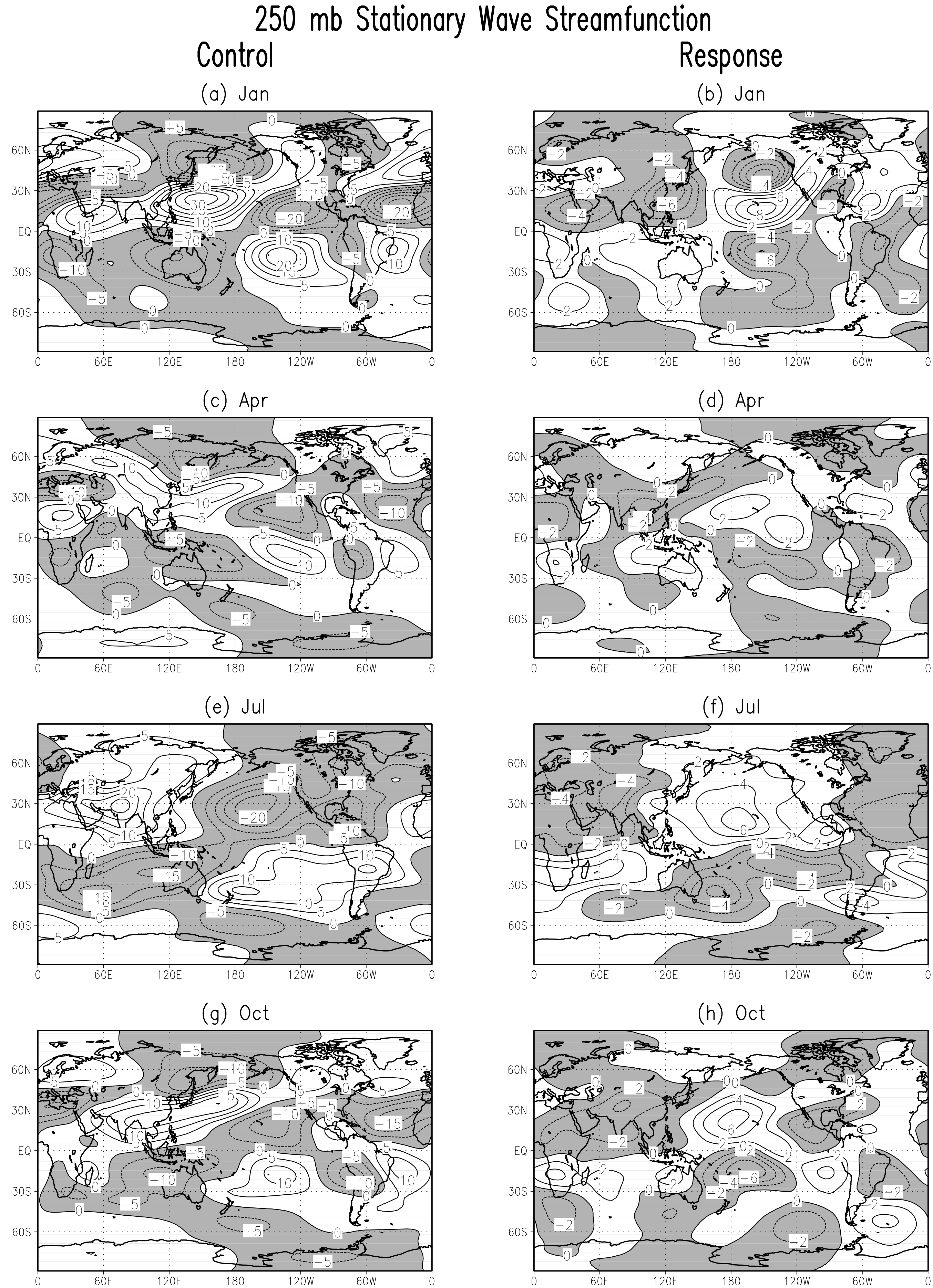

Fig. 4: Stationary wave streamfunction at 250 mb for the control integration (left panels) and the climate change response, that is, the difference between the ensemble average climate change scenario integration and the control integration (right panels) for January (a, b), April (c, d), July (e, f), and October (g, h). Contour intervals are 5x10^6 m^2s^-1 for control and 2x10^6 m^2s^-1 for the difference. Negative values are shaded.

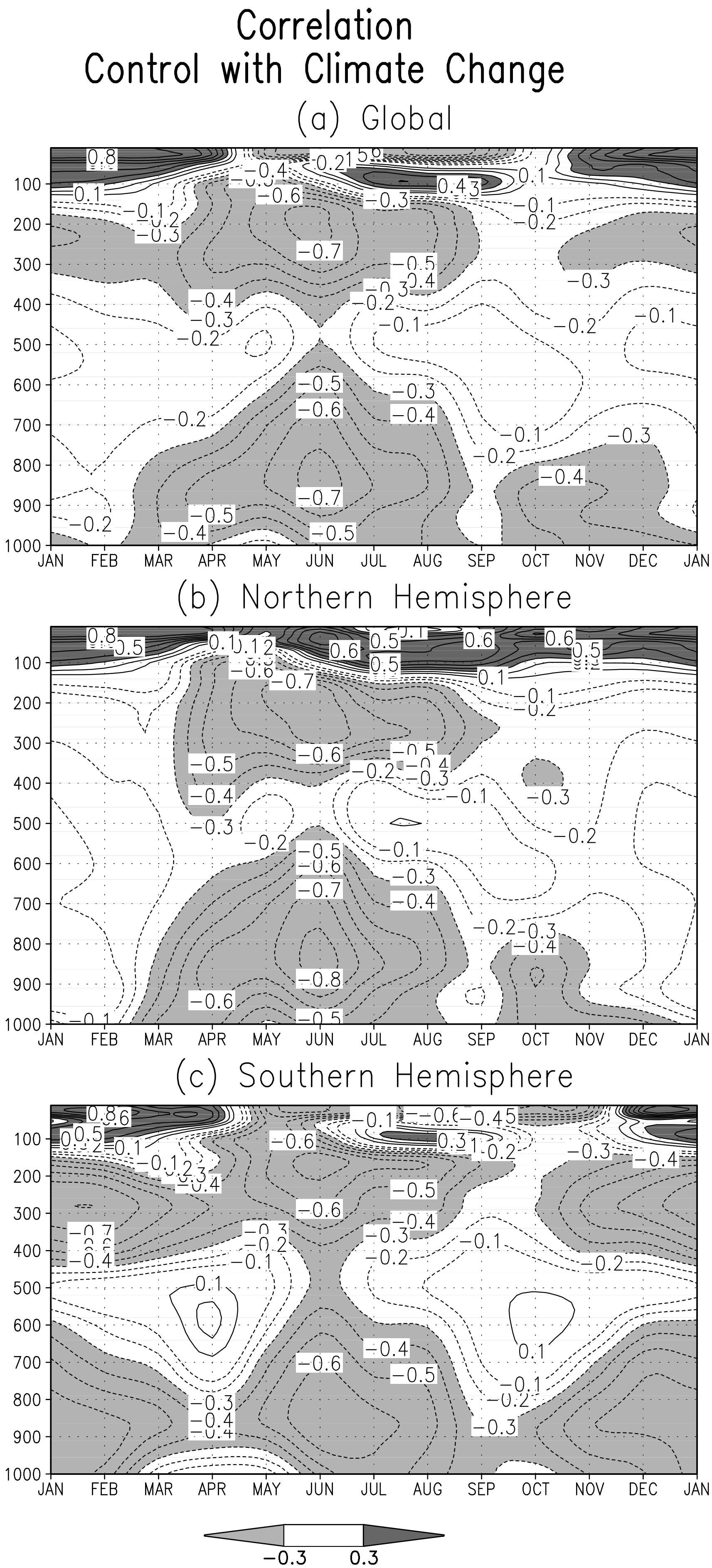

Fig. 5: Area weighted spatial pattern correlation between the control integration's stationary wave streamfunction and the climate change response for (a) the whole globe, (b) the NH, and (c) the SH. Contour interval is 0.1 and correlations greater than 0.3 are heavily shaded and those less than –0.3 are lightly shaded.

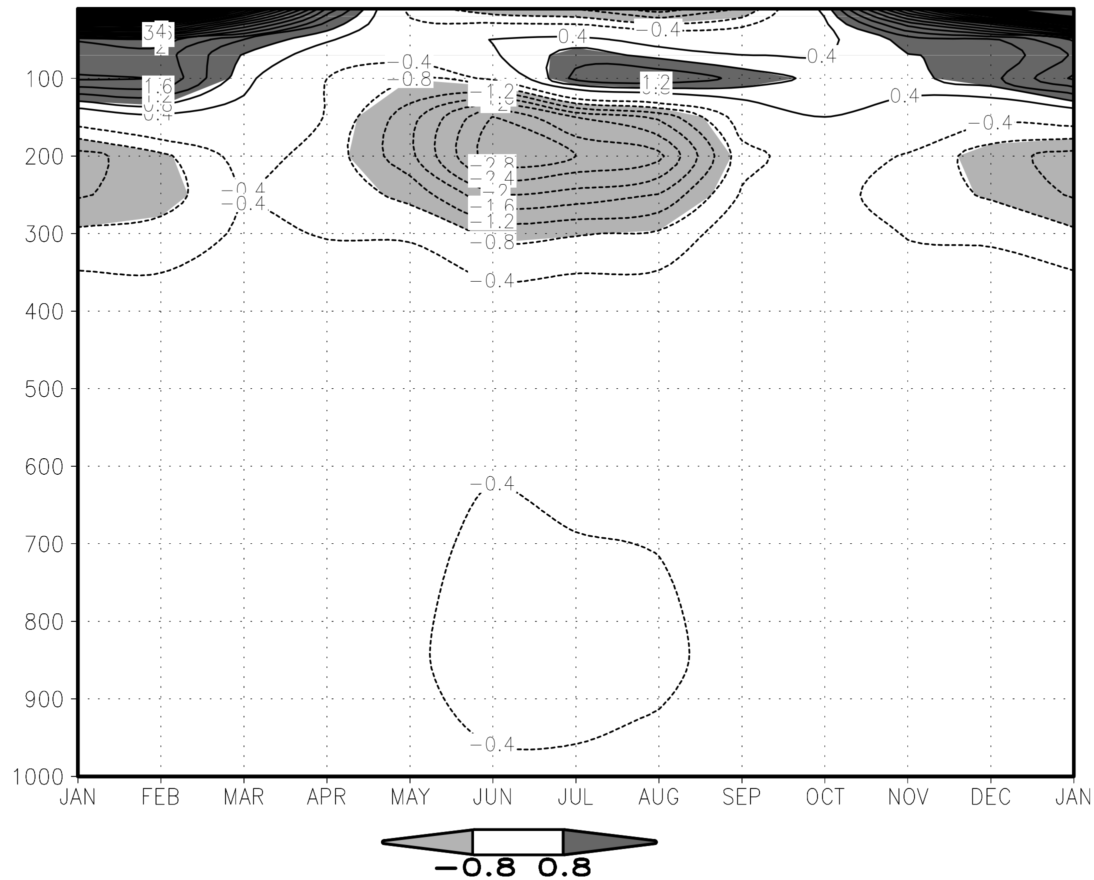

Fig. 6: Area weighted global integral of the square of the stationary wave responses to climate change in streamfunction as a function of pressure and month. Contour interval: 0.4x10^13 m^4s^-2 and values greater than 0.8x10^13 m^4s^-2 are heavily shaded and those less than -0.8x10^13 m^4s^-2 are lightly shaded.

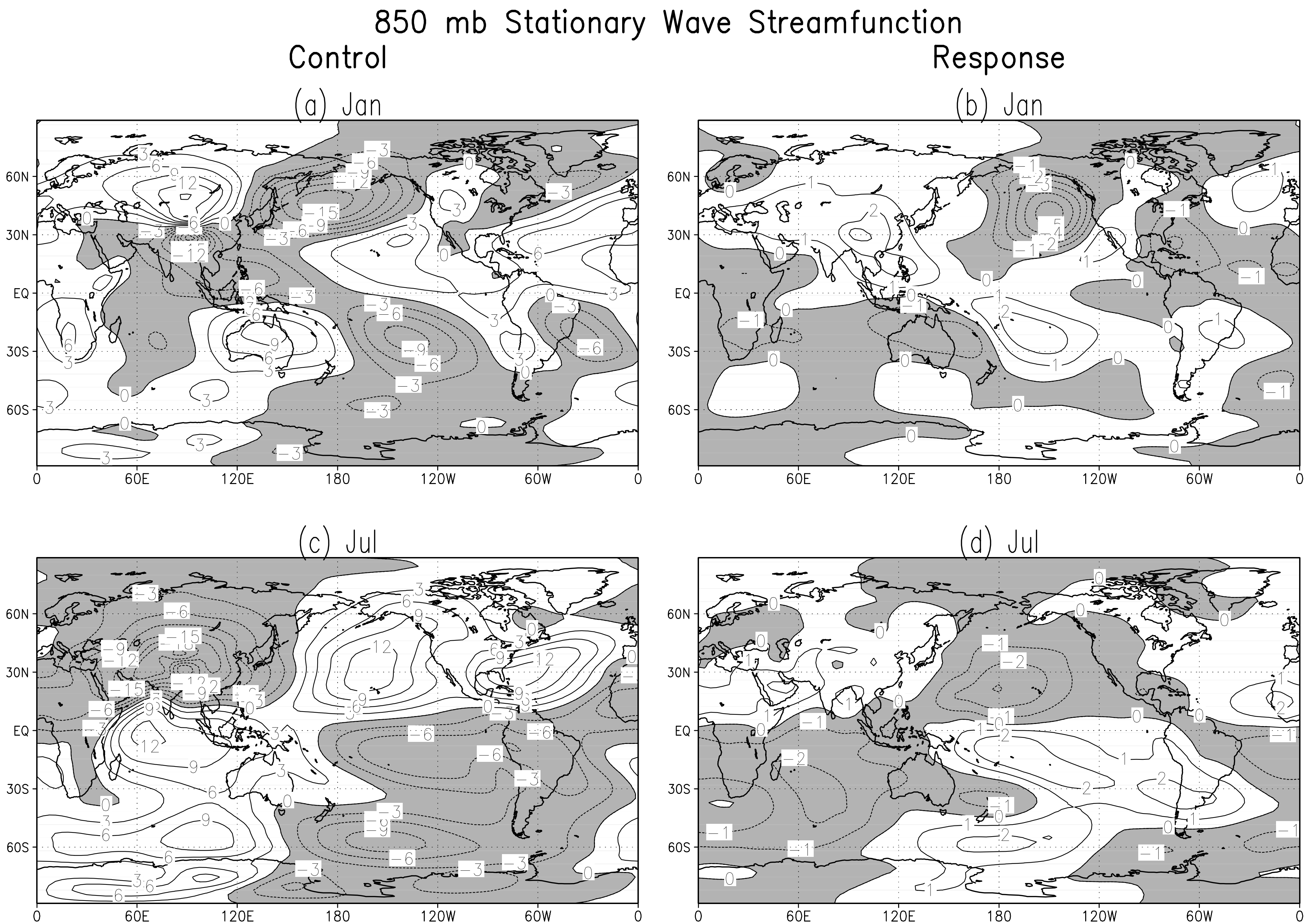

Fig. 7: Stationary wave streamfunction at 250 mb for the control integration (left panels) and the climate change response (right panels) for January (a, b) and July (c, d). Contour intervals are 3x106 m^2s^-1 for the control and 1x10^6 m^2s^-1 for the response. Negative values are shaded.

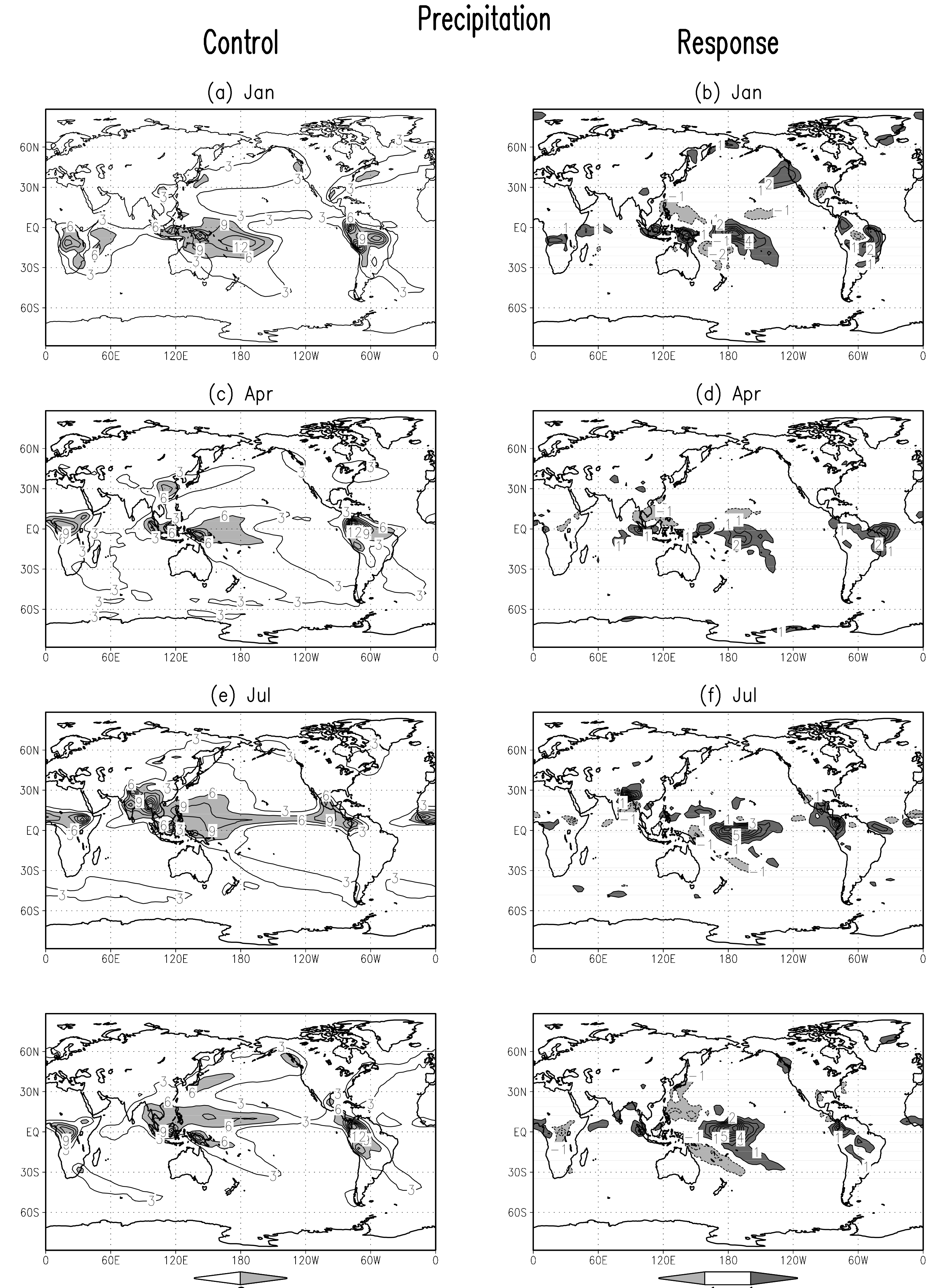

Fig. 8: Precipitation (in mm/day) for the control (left) and for the climate change response (right) for January (a, b), April (c, d), July (e, f), and October (g, h). Contour intervals are 3 mm day^-1 for the control and 1 mm day^-1 for the response.

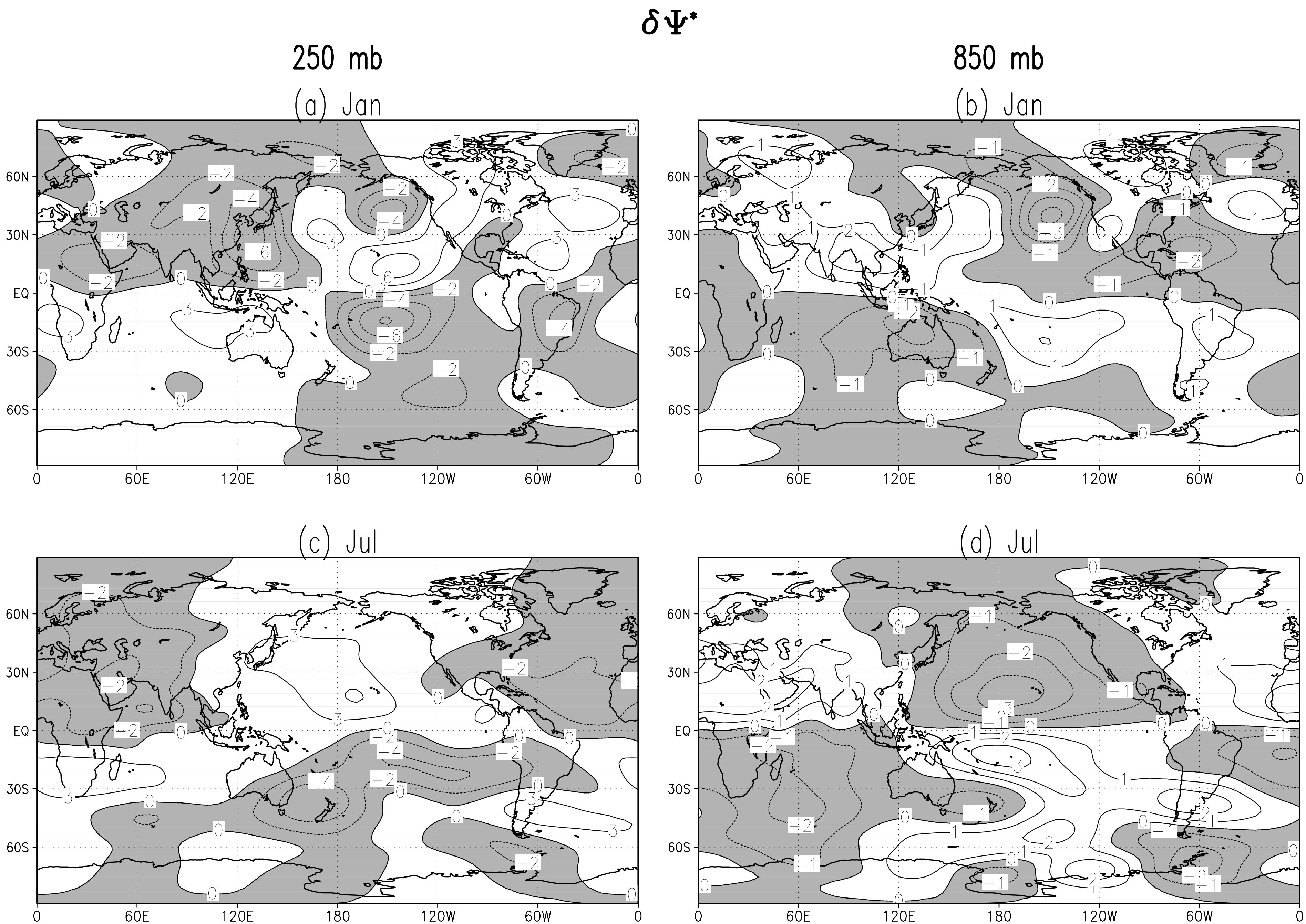

Fig. 9: Stationary wave streamfunction response of the linear model to climate change at 250 mb (left) and 850 mb (right) for January (a ,b) and July (c , d). Contour interval is 2x10^6 m^2s^-1 for the upper level and 1x10^6 m^2s^-1 for the lower level. Negative values are shaded.

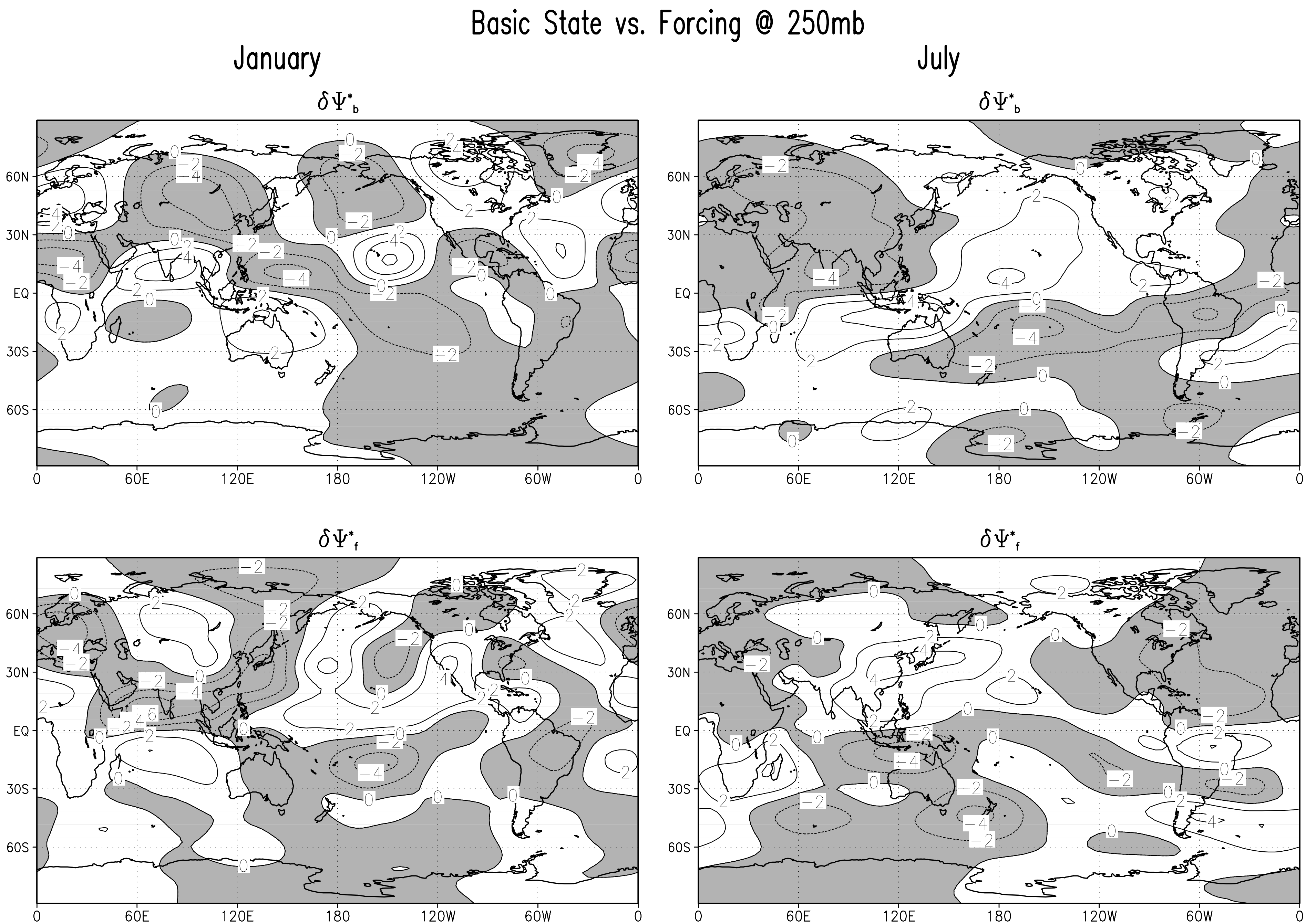

Fig. 10: Stationary wave streamfunction response of the linear model to the climate change induced perturbation to the zonal mean basic state, for January (a) and July (b), and stationary wave streamfunction response of the linear model to the climate change induced stationary wave forcings for January (c) and July (d). Contour interval is 2x10^6 m^2s^-1 and negative values are shaded.

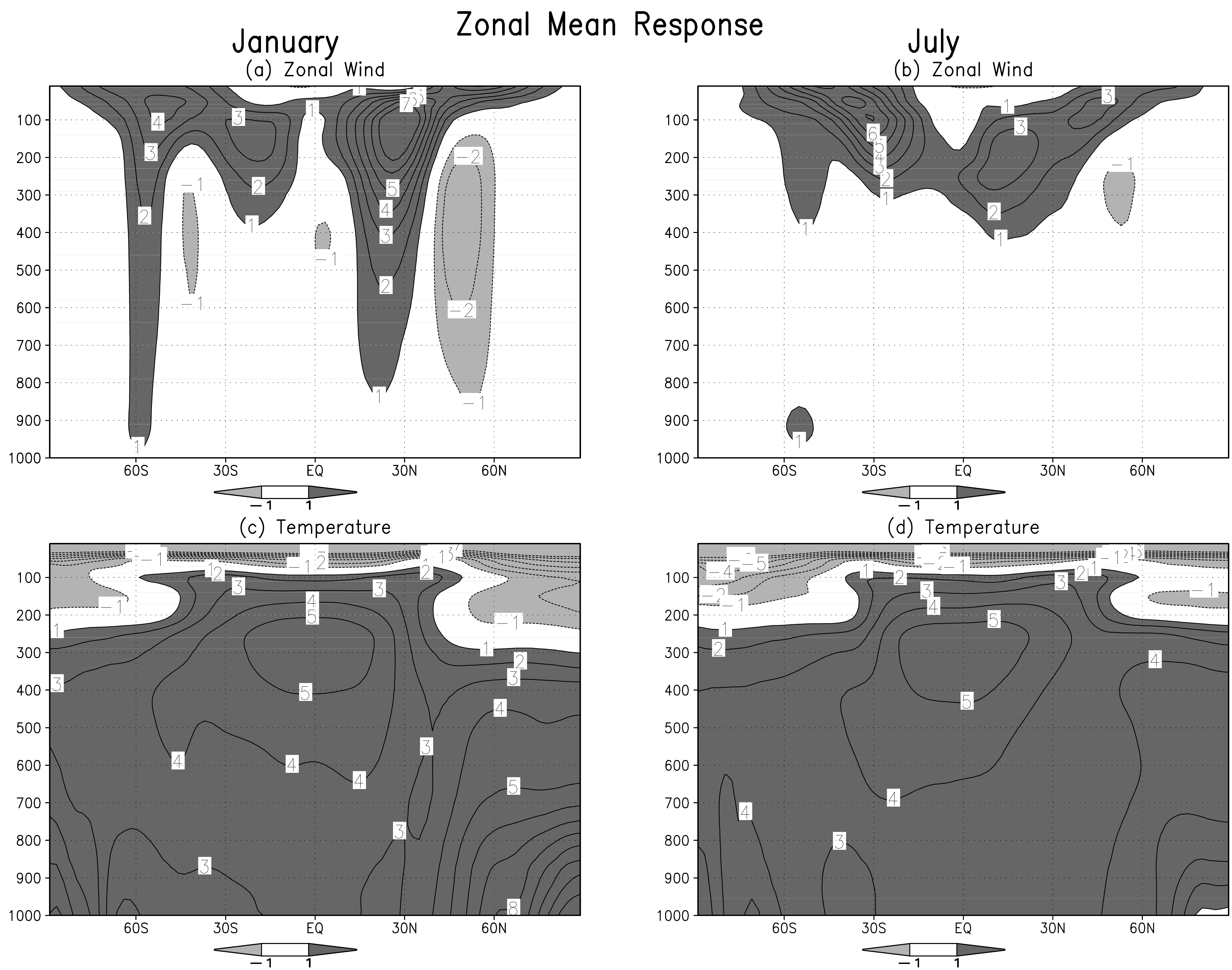

Fig. 11: Zonal mean wind (a, b) and temperature (c, d) response to climate change January (left) and July (right). Contour interval is 1 ms-1 for wind and 1K for temperature and values greater than 1 are heavily shaded and those less than –1 are lightly shaded.

Linear Model

250 mb Stationary Wave Response

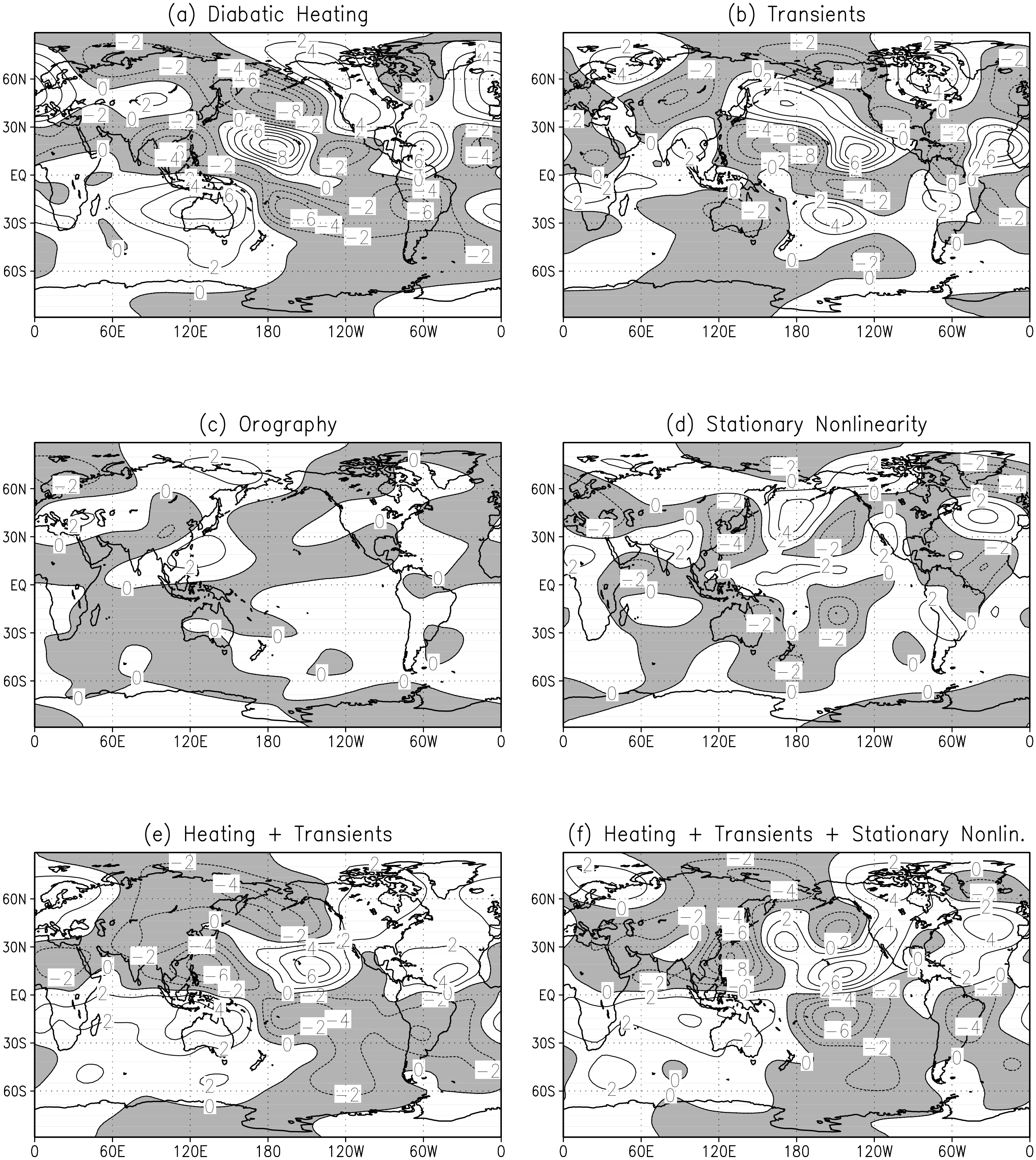

Fig. 12: Linear model response, in January, to forcings from (a) diabatic heating; (b) transients; (c) orography; (d) stationary nonlinearity; (e) the sum of diabatic heating and transient forcing; (f) the sum of diabatic heating, transients and stationary nonlinearity. Contour interval is 2x10^6 m^2s^-1. Negative values are shaded.

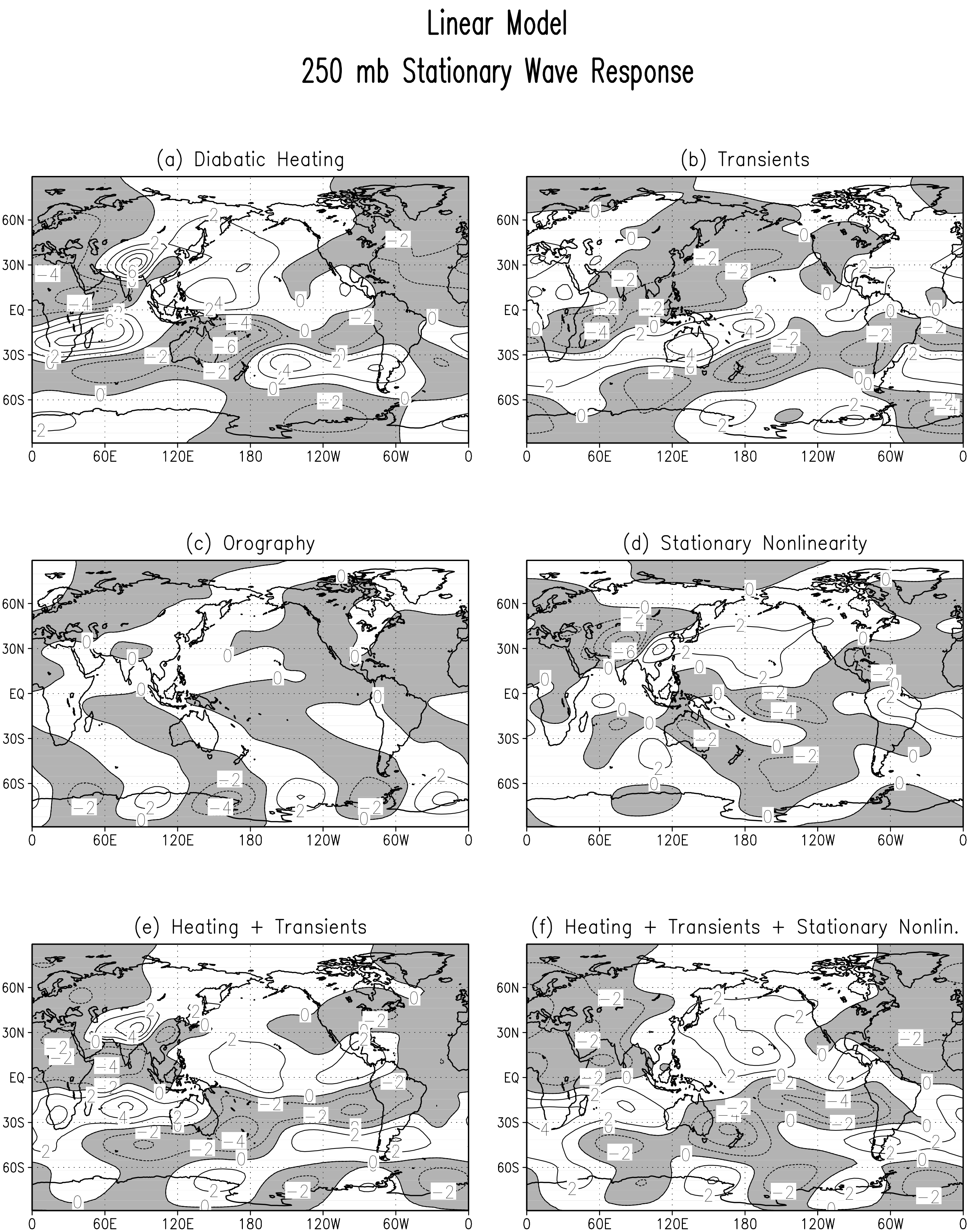

Fig. 13: As Fig. 12, but for July.

Linear Model Response to Heating with Transients Parameterized
Upper Level (@250 mb)

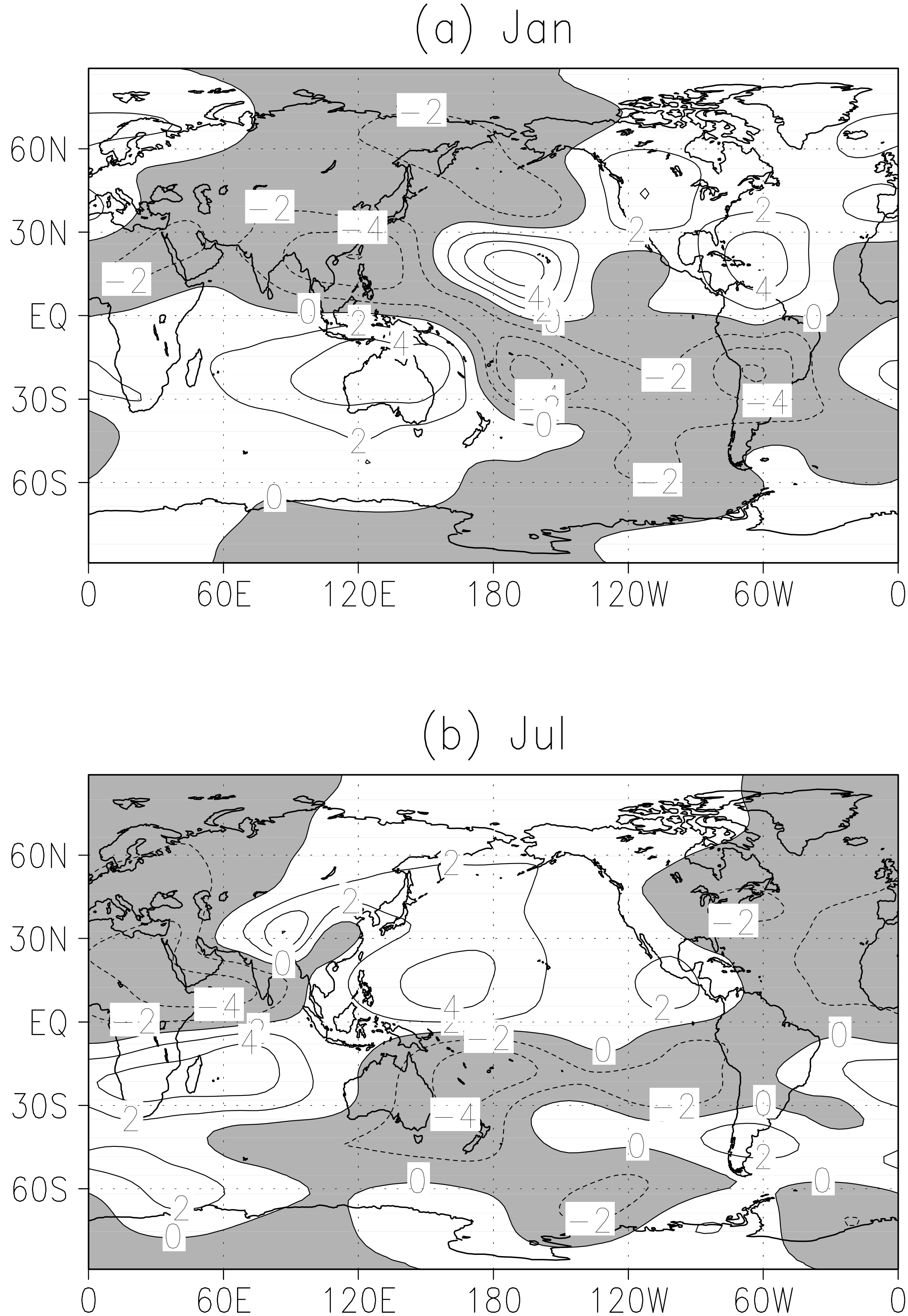

Fig. 14: Linear model response in (a) January and (b) July to diabatic heating and extratropical transients with the effect of tropical transients parameterized as a 5 day damping at 0.17, 0.256, 0.354, 0.46, 0.569 σ levels.